



Dryden Flight Research Center
Edwards, California 93523-0273

DCP-S-038
Baseline
February 3, 1999

DRYDEN CENTERWIDE PROCEDURE

CODE SH

HAZARD COMMUNICATION and MATERIAL SAFETY DATA SHEET (MSDS) INSTRUCTION GUIDE AND DICTIONARY

Electronically Approved by:
Associate Director

Approved by:
Acting Director, Safety and Mission Assurance

Approved by:
Chief, Safety, Health, and Environmental Office

ALL DOCUMENTS ON THIS SITE
<http://www.dfrc.nasa.gov/DMS/dms.html>
ARE FOR REFERENCE ONLY
THIS SITE IS UPDATED EVERY 30 DAYS

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 1 of 33

DOCUMENT HISTORY LOG

Status	Document Revision	Effective Date	Description
Baseline		February 3, 199	

ALL DOCUMENTS ON THIS SITE
<http://www.dfrc.nasa.gov/DMS/dms.html>
 ARE FOR REFERENCE ONLY
 THIS SITE IS UPDATED EVERY 30 DAYS

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 2 of 33

TABLE OF CONTENTS

	Page
1.0 INTRODUCTION	
1.1 Purpose	4
1.2 Applicability	4
1.3 Scope	4
2.0 APPLICABLE DOCUMENTS	
2.1 Authority Documents	4
2.2 Guideline Documents	5
3.0 DEFINITIONS	6
4.0 RESPONSIBILITIES	
4.1 Overview	6
4.2 Directorates and Single Letter Offices	6
4.3 Safety, Health, and Environmental Office	6
4.4 Line Supervisors	7
4.5 Supervisors	7
4.6 DFRC Employees Handling Hazardous Chemicals	8
4.7 Persons Who Requisition and Purchase Hazardous Chemicals	8
4.8 Shipping and Receiving Personnel	9
5.0 LOCATION AND STORAGE OF HAZARDOUS MATERIALS	
5.1 Facilities	9
5.2 Workplaces	9
5.3 Storage	9
6.0 EMERGENCIES AND NON-EMERGENCIES	
6.1 Spills and Releases	9
6.2 Exposures or Injuries	10
7.0 CONTRACTORS	
7.1 On-Site Contractors	10
7.2 Off-Site Contractors	10

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 3 of 33

8.0 LABELS and WARNING SIGNS

8.1	The HC Labeling Program	11
8.2	Acceptable Labels	11
8.3	Warning Signs	11

9.0 NON-ROUTINE TASKS

9.1	Identified Non-Routine Tasks	12
-----	------------------------------------	----

10.0 TRAINING

10.1	Safety, Health, and Environmental Office	12
10.2	Directorates and Single Letter Offices	12
10.3	Supervisors	12

APPENDIX A

MATERIAL SAFETY DATA SHEET (MSDS) INSTRUCTION GUIDE AND DICTIONARY

1.0	GENERAL INFORMATION	13
2.0	HAZARDOUS MATERIALS	13
3.0	MSDS FORMAT	14
4.0	MSDS INFORMATION	
4.1	Section 1: General Information	14
4.2	Section 2: Hazardous Ingredients Information	15
4.3	Section 3: Physical/chemical Characteristics	15
4.4	Section 4: Fire and Explosive Hazard Data	15
4.5	Section 5: Reactivity Data	16
4.6	Section 6: Health Hazard Data	16
4.7	Section 7: Precautions for Safe Handling and Use	16
4.8	Section 8: Control Measures	17
4.9	Section 9: Special Precautions and Comments	17
5.0	GLOSSARY OF MSDS TERMS	17

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 4 of 33

1.0 INTRODUCTION

1.1 Purpose

This Dryden Centerwide Procedure (DCP-S-038) establishes basic safety procedures and guidance for handling hazardous materials at DFRC.

1.2 Applicability

DCP-S-038 applies to government and non-government personnel at DFRC and at DFRC controlled off-site locations.

1.3 Scope

This DCP applies to DFRC personnel both on site and at off-site locations who handle hazardous materials with the following exclusions:

- This DCP does not cover hazardous waste disposal. Hazardous waste disposal is conducted in compliance with the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, and other applicable regulations.
- Items such as tobacco, wood products, foods, drugs, or cosmetics intended for personal use, consumer substances and those excluded by 29 CFR 1910.1200, which do not expose employees to hazards when used under normal conditions.

2.0 REFERENCE

2.1 Authority Documents

- 2.1.1 29 CFR 1910.1200; Hazard Communication. This CFR is the primary authority document for establishing a Hazard Communication Plan (HCP).
- 2.1.2 29 CFR 1910.120; Hazardous Waste Operations and Emergency Response. This standard sets policy for clean-up and emergency response operations for organizations those use or store hazardous materials.
- 2.1.3 NHB 2710.1 NASA Occupational Safety and Health. This document established the requirement for NASA Installation Hazard Communication Program.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 5 of 33

2.1.4 DFRC Hazard Communication Program (HCP). This HCP establishes the requirements that DFRC follows in order to comply with federal and NASA regulations and directives governing Hazard Communication.

2.2 Guideline Documents

2.2.1 NASA Directives

The following documents support NASA's Hazard Communication Program by establishing the requirements for providing a safe and healthful work place for NASA employees.

- NPD 1800.2; NASA Occupational Health Program
- NPD 1810.2; NASA Occupational Medicine Program
- NPD 1820.1; NASA Environmental Health Program
- NPD 8710.2B; NASA SAFETY AND HEALTH PROGRAM POLICY
- NPD 1441.1; RECORDS RETENTION SCHEDULE

2.2.2 ANSI Z400.1 Hazardous Industrial Chemicals-Material Safety Data sheets.

2.2.3 This document covers many of the requirements of 29 CFR 1910.1200 and also shows how to prepare a MSDS.

2.2.4 CAL/OSHA, Title 8, Chapter 3.2, Article 5, Hazardous Substances Information and Training. This Article is a good reference for the hazardous chemical list and includes the Chemical Abstract Service (CAS) numbers for hazardous chemicals.

2.2.5 NASA-Dryden Chemical Management Handbook. This handbook establishes the specific manner in which DFRC will handle the purchasing, distribution, and waste handling of hazardous chemicals.

3.0 DEFINITIONS

See Appendix A: Material Safety Data Sheet Instruction Guide and Dictionary.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 6 of 33

4.0 RESPONSIBILITIES

4.1 Overview

The chain of responsibility for ensuring that there is a safe work environment at DFRC that follows required safety standards, regulations, codes, and guidelines starts with the Center Director and flows downward through management to supervisors. In addition, each person who works at DFRC must understand that a “condition of employment” is to observe all safety specifications applicable to the task being performed.

4.2 Directorates and Single Letter Offices

Are responsible for ensuring the Hazard Communication Plan (HCP) is written and implemented within their area of responsibility.

4.3 Safety, Health, and Environmental Office

The Chief, Safety, Health and Environment Office has oversight responsibility for DFRC Hazard Communication Program and incurs the following duties:

- Advise management on matters concerning Hazard Communications.
- Ensure that a Hazard Communication Program is developed and distributed to users.
- Ensure the MSDS master file is complete for chemicals listed in the latest master HC inventory. Provide changes to existing MSDSs to users.
- Provide basic hazard communication training.
- Assist supervisors in the preparation of safety procedures and training directives for HCs used by their employees.
- Investigate hazardous material accidents and incidents and report findings to management and required agencies.
- Review new MSDSs to ensure adequate information is provided.
- Perform audits at least annually to evaluate compliance with this HCP.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 7 of 33

4.4 Line Supervisors

- Ensure implementation of the HCP within their area of responsibility.
- Conduct an HCP compliance review at least annually.
- Review Hazard Communication training requirements of personnel and authorize training where needed.

4.5 Supervisors

Supervisors may delegate responsibility (in writing) to manage the HCP to a person or persons within the Section. Responsibilities will include:

- Ensure a copy of this DCP is located with the shop MSDS files and is available to employees at all times.
- Maintain an inventory of Hazardous Chemicals (HCs) used within the Section. The HC list must be available to persons who could come in contact with a HC.
- Maintain a Material Safety Data Sheet (MSDS) file for all HCs used by the Section.
- Ensure that MSDSs are kept in readily accessible locations so employees may refer to them any time they are in the work area. Provide a copy of a MSDS to an employee on their request.
- Ensure appropriate training is provided to employees who handle, use, or who could be exposed to HCs within the Section. Supervisors will maintain a copy of persons training records within the Section. See Section 10.0, Training, for additional training requirements.
- Maintain a diagram showing the storage locations of HCs in the Section including those in pipes and equipment.
- Audit Section compliance and submit a written report to the next higher management level at least annually.
- Ensure HCs are and remain properly labeled. If a label is damaged, a new one may be obtained by contacting the DFRC Chemical Crib in building

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 8 of 33

4823. See Section 8, Labels and Warning Signs, for more information on labels.

- Each Shop or Section shall maintain written operation procedures for non-routine tasks involving HCs. These procedures will be made available to workers and be part of supplemental training. See Section 9.0, Non-Routine Tasks, for additional information.

4.6 DFRC Employees Handling Hazardous Chemicals

- Will receive training on the proper handling of HCs. If an employee feels he/she does not have adequate training to handle any chemical or chemicals safely they will contact their supervisor and request additional training.
- Will handle HCs in accordance with MSDS instructions and workplace safety procedures.

4.7 Persons Who Requisition and Purchase Hazardous Chemicals.

Requisition and purchase of hazardous chemicals will be in accordance with instructions of NASA- Dryden Chemical Management Handbook, Operational Instruction SH-012-6/93, "Requisition and Purchase of Hazardous Materials." This document may be obtained from the Safety Office.

4.8 Shipping and Receiving Personnel

- Ensure HCs, which do not have approved MSDSs, are not released for use until the MSDS has been approved by the Safety, Health, and Environmental Office.
- Reject in coming shipments of HCs that are improperly labeled. If the using organization has an account with the DFRC Hazardous Material Distribution Support Center (Chemical Crib) and the HC is on file the Chemical Crib personnel may make a new label. For organizations who do not have an account with the Chemical Crib, the Safety, Health, and Environmental Office may approve labeling and can usually provide a locally produced label for known HCs that are not prohibited substances.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 9 of 33

5.0 LOCATION AND STORAGE OF HAZARDOUS MATERIALS

5.1 Facilities

A diagram of the location of hazardous materials in DFRC buildings shall be contained in each building's Emergency Procedures book. The Emergency Procedures book will be maintained by the building supervisor and available for review by building occupants.

5.2 Workplaces

Each Section using HCs will have a diagram of the storage locations of HCs in the workplace including those in pipes and equipment. If an unlabeled pipe is located in a workplace Facility Maintenance will be contacted to identify and label the pipe.

5.3 Storage

Storage of HCs will be in accordance with NASA-Dryden Chemical Management Handbook, Operational Instruction SH-005-3/93.

6.0 EMERGENCIES AND NON-EMERGENCIES

6.1 Spills and Releases

- Small spills and releases (non-emergencies) of certain HCs will be cleaned up or controlled in accordance with instructions provided in the MSDS by the person or persons using the HC.
- Spills and releases that pose a health or physical hazard or are too large to be handled by the using person/s (emergency), require a 911 emergency telephone system contact to the DFRC Security Command Post. The caller will identify the location and material that has been spilled or released and what action is being taken, such as evacuation, isolation, etc. The Security Command Post will evaluate the situation, and make the appropriate announcement to Dryden personnel if the situation so dictates, and notify the appropriate organizations that react to spills and releases.

6.2 Exposures or Injuries

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 10 of 33

- Persons who are injured by exposure or contact with a HC will be moved to either a safe location, decontaminated, taken to a shower or eye wash, as quickly as possible depending on the situation. Care should be taken by the persons assisting the contaminated person not to become cross contaminated.
- When notified of exposures or injuries, the DFRC Health Unit shall respond immediately with appropriate equipment to treat the exposed or injured person/s. Medical personnel will take precautions to not become cross-contaminated.

7.0 CONTRACTORS

7.1 On-site Contractors

On-site contractors will follow the procedures in this HCP.

7.2 Off-site Contractors

Off-site contractors are those who are contracted to come on-site or to a DFRC controlled site to do a particular, usually short-term job.

7.2.1 The Contracting Officer will:

- With the assistance of the area supervisor advise the off-site contractor of the hazardous chemical they may encounter and protective measures needed in the normal course of their work.
- Inform the off-site contractor that MSDSs and labels for HCs used at DFRC may be obtained from the Safety Office for materials supplied by DFRC.
- The off-site contractor will provide the Contracting Officer with a list of HCs that will be used while the contractor is on-site. These HCs will be approved by the Safety Office before use. The contractor will also provide the Safety Office with MSDSs for all HCs used and will maintain their own copies.
- The Contracting Officer will notify the off-site contractors that proof of Hazard Communication training for employees who will

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 11 of 33

use or handle HCs while completing work at DFRC may be required by the Safety Office.

8.0 LABELS and WARNING SIGNS

8.1 The HC Labeling Program

The Safety Office, Hazardous Waste Technician, oversees the HC labeling program.

8.2 Acceptable Labels

DFRC will accept the labels provided by the manufacturer or wholesaler of HCs when the labels are accurate and complete.

8.3 Warning Signs

8.3.1 National Fire Protection Association 704, Chapter 6; Identification of Hazards of Materials for Emergency Response, color-coded warning signs will be used to identify areas where HCs are used and on storage facilities containing HCs.

9.0 NON-ROUTINE TASKS

A non-routine task is one that is included within a work area's normal activities but performed infrequently such as cleaning chemical tanks, changing chemicals, cleaning up spills, or temporary duties outside an individual's normal specialty.

9.1 Identified Non-routine Task:

- Will have a procedure written for it. The non-routine task procedures will be located where employees can easily obtain them.
- In order to become re-familiarized with non-routine procedures the person/s will read and become familiar with the procedures before starting the task.

10.0 TRAINING

10.1 Safety, Health, and Environmental Office

ALL DOCUMENTS ON THIS SITE
<http://www.dfrc.nasa.gov/DMS/dms.html>
 ARE FOR REFERENCE ONLY
 THIS SITE IS UPDATED EVERY 30 DAYS

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 12 of 33

Will provide primary Hazard Communication training to DFRC personnel on an as needed basis. This training, required by 29 CFR 1910.1200 (h); “Employee information and training,” will follow the guidelines of the Federal Hazard Communications Training Plan (FHCTP).

10.2 Directorates and Single Letter Offices

Will ensure that, where HCs are used in their area of responsibility, supervisors and workers receive appropriate hazard communication training. New employees or employees transferred to a HC use area shall receive training before being allowed to handle HCs or work in an area where HCs are used.

10.3 Supervisors

Supervisors shall ensure that workers under their supervision receive initial training using the FHCTP or equivalent approved program prior to using or being exposed to HCs. This training will usually be conducted by Safety personnel but may be taught by persons qualified to teach the program such as supervisors, occupational health personnel, and qualified off-site contract instructors. Supervisors shall provide supplemental training on work area specific chemicals. The instructor, (usually a person from within the Section) will review the required information to be taught with the Safety Office Industrial Hygienist for technical accuracy.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 13 of 33

APPENDIX A

MATERIAL SAFETY DATA SHEET (MSDS) INSTRUCTION GUIDE AND DICTIONARY

1.0 GENERAL INFORMATION

It is estimated that there are nearly 600,000 existing chemical products with new ones being introduced annually. Over 30 million workers are exposed to one or more of these chemicals. Thousands of workers sustain injuries each year in the United States as a result of improper handling of hazardous chemicals (HCs). Such injuries can cause pain and suffering, loss of income, change the quality of life, and shorten the life of individuals involved by causing health hazards such as heart ailment, kidney and lung damage, sterility, cancer, burns, and rashes. Chemicals may also pose physical hazards such as explosions, fires, chemical burns, or other serious accidents.

Because of the seriousness of health and safety problems these HCs can cause, the Occupational Safety and Health Administration (OSHA) has established a standard that employers must comply with in an attempt to reduce injuries. This OSHA standard is OSHA 29 CFR 1910.1200.

The major requirement of the standard is to cause every employer to make employees aware of the standard, train the employees in the proper procedures in handling specific chemicals in the workplace, and to make MSDSs available to anyone who works with or could come into contact with a hazardous chemical in the workplace.

The purpose of the MSDS is to inform the user of hazardous materials of the specific hazards the materials pose and how to safely use the materials to avoid those hazards both in normal usage and in emergency conditions. MSDSs are documents that could save you or your co-worker from serious injury or even save a life.

You should not handle any known or suspected hazardous material until you study the MSDS. MSDSs should be reviewed periodically to insure that proper procedures are being followed and to stay current with changes.

2.0 HAZARDOUS MATERIALS

Hazardous materials are those that are:

- Listed in 29 CFR part 1910, Subpart Z, Toxic and Hazardous Substances.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 14 of 33

- Chemical or compound assigned a Threshold Limit Value (TLV[®]) by the American Conference of Government Industrial Hygienists (ACGIH) or a Permissible Exposure Limit (PEL) by OSHA.
- Chemicals or compounds determined to be carcinogen, corrosive, toxic, an irritant, a sensitizer, or can damage specific body organs.

3.0 MSDS FORMAT

There is no set format for MSDSs. They must, however, contain certain information and be written in English. OSHA has developed a recommended MSDS format, which is used in the attachment to show the information required by law.

MSDSs vary widely in quality. Even the ones that appear to be complete may miss important information. Always read the MSDS with caution. Should you have any questions regarding any portion of the MSDS ask you supervisor for assistance or contact the Safety Office.

4.0 MSDS INFORMATION

As stated, there is no required format of MSDSs. You must find the section that contains the information you need. OSHA recommends the MSDS format used here.

4.1 Section 1: General Information

This section should contain the name, address and telephone number of the manufacture or supplier of the chemical. There should also be a date of the MSDS given and the name, and trade name, if any, of the chemical and be exactly the same as on the label on the container. This section may also contain the formula of the chemical, DOT hazard class, and other general information that the manufacture or supplier wants to convey. Some companies use a heading to identify the material then use Section 1 to cover other information.

Importance: Section 1 is important because it allows the user or receiver of the chemical to quickly identify the chemical as the correct one. If there is a difference between the names on the MSDS and container label the chemical should not be accepted. The emergency telephone number allows the user to obtain added information especially in case of an emergency such as a spill or fire.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 15 of 33

4.2 Section 2: Hazardous Ingredients Information

This section should list each hazardous chemical in the product and give their percentage of concentration (in some cases the percentage is optional). If exposure limits have been determined they will be listed for each chemical. You may find exposure limits listed as PEL, TLV[®], TWA, LD50, or LC50, etc. These terms are explained in the dictionary portion of this attachment.

Trade Secrets: A manufacture does not have to release the names of the ingredients in a compound if the formula is declared a "Trade Secret." However, in the case of an emergency the manufacture is required by law to make the ingredients know to medical personnel.

Importance: Section 1 is important because it allows the user to know what the ingredients of a compound are, what hazards they pose, and what their exposure limits are.

4.3 Section 3: Physical/chemical Characteristics

The physical/chemical characteristics section includes boiling point, specific gravity, vapor pressure, melting point, vapor density, evaporation rate, solubility, and appearance and odor, and other data the manufacturer wants to convey.

Importance: This section alerts the user to how a chemical will react in certain situations. By knowing the physical characteristics the user can better understand the hazards the chemical poses.

4.4 Section 4: Fire and Explosion Hazard Data

This section lists the flash point, flammable limits; LEL and UEL, extinguishing media, any special fire fighting procedures to include the of protective clothing and respiratory equipment that is needed.

Importance: A quick review of this section informs the user about the potential fire and explosion precautions that are needed when using the chemical. It is also important to any one who tries to control a fire or spill. When exposed to some volatile chemical, persons must leave the area and allow fire fighters or spill response personnel to attend to the emergency. This section will tell the user what action is recommended.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 16 of 33

4.5 Section 5: Reactivity Data

If the chemical will react with certain materials it will be listed in this section. You may see considerable variation from one MSDS to another here, read the section with caution and if you have questions contact an Industrial Hygienist at the Safety Office. This section should cover situations that are most likely to happen if the chemical is not handled properly.

Importance: The information in this section will preclude accidental mixing of certain chemicals that cause undesirable reactions. It also alerts to the need to store reactivity chemicals away from each other. An example would be storing oxygen near any carbon-based material such as oils, grease, gasoline, etc. Should these materials mix there would be a hypergolic reaction resulting in fire or explosion. The type of storage container needed may be listed such as to store certain chemicals in explosion proof cabinets or on wood or metal shelves, etc.

4.6 Section 6: Health Hazard Data

A person may get a harmful chemical “on board” (in the body) by several routes. Entry into the body may be by eye or skin contact, inhalation, and ingestion. This section must describe all of the routes of entry pertinent to the material. Known acute and chronic health effects must be stated. Medical and first aid treatments for over exposure will be described.

Importance: Injury and even death from exposure to certain chemicals can be prevented if persons are aware of potential hazards. If an accidental exposure does occur the initial proper first aid or medical treatment can greatly reduce injury to the victim.

4.7 Section 7: Precautions for Safe Handling and Use

In this section the safe practices to follow in the event of an accident such as spills, leaks and disposal of wastes and other precautions are covered.

Importance: This section informs the workers on the safe procedures to take in case of a spill or release. This information will enable workers to pre-plan for an emergency and become trained in clean-up procedures. Federal, state, and local hazardous waste laws will govern the actions that should be taken during certain clean-ups. Never make a bad situation worse by reacting to a spill or release without the proper knowledge of how to accomplish the clean-up task.

4.8 Section 8: Control Measures

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 17 of 33

Proper procedures and the use of personal protection equipment (PPE) are covered in this section. This information will reduce the user exposure to a chemical. Respiratory protection, ventilation; local, general or special exhaust, protective gloves, eye protection, and other protective clothing or equipment required will be listed. Recommendations for work and hygiene practices may also appear here.

Importance: When a person is working directly with a hazardous chemical this section should inform them of the special procedures and PPE required to reduce exposure. In some MSDSs this section is weak. Example; the MSDS may state that respiratory protection is necessary but not state the type or level of equipment. When this is found contact an Industrial Hygienist at the Safety Office for clarification.

4.9 Section 9: Special Precautions and Comments

This section contains procedures for transporting chemicals and safe storage. The type of labels or markings on the container are covered and if required the DOT policies for shipping the chemical will be listed. Any other comments that the supplier wants the user to know may be given here.

Importance: How a material is moved and stored is important. A stored material is not necessarily safe. Containers can corrode and leak. Storing incompatible materials together can be very dangerous. This section may also have information that does not fit in other sections or a particular hazard may be reemphasized here.

5.0 GLOSSARY OF MSDS TERMS

Absolute: A chemical substance that is not mixed, i.e., pure.

Absorption: To take in, for example, to absorb a chemical through the skin.

Acid: Any chemical, which undergoes dissociation in water with the formation of hydrogen. Has a pH of less than 7.0. Neutralizes bases.

Acidosis: A condition of decreased alkalinity of the blood. Causes a sickly sweet breath, headache, nausea, vomiting, and visual disturbances. Usually a result of excessive acid production in the body. Body production of acid may be the result of contact with a chemical or drug.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 18 of 33

Action Level: The concentration of a material in air at which level OSHA regulations take effect to protect employees.

Acute: Effects that generally occur rapidly as a result of short-term exposure and are of short duration. Effects may be listed as Acute Health Effects, Acute Toxicity, etc.

ACGIH: American Conference of Governmental Industrial Hygienists. This organization develops and publishes recommended occupational exposure limits for chemical substances and physical hazards. ACGIH recommended exposure limits are listed as Threshold Limit Values (TLV[®]).

Adsorption: The condensation and adhesion of a liquid on the surface of a solid such as moisture adhering to glass.

Aerosol: A fine aerial suspension with small enough particles to remain suspended in air.

Agent: Any substance, force, radiation, organism, or influence that affects the body, may be good or bad.

ALARA: As Low As Reasonably Achievable.

Air Line Respirator: A respirator that is connected to a compressed breathing air source by a hose.

Air Purifying Respirator: A respirator that uses chemicals to remove specific gases and vapors from the air or that uses a mechanical filter to remove particulate matter. These units may only be used where sufficient oxygen is present and the contaminant level is below the concentration limits of the unit.

Alkali: A chemical group, which forms soluble soaps with fatty acids. May be referred to as bases. Can cause burn to skin. Turns litmus paper blue and has a pH from 8 to 14.

Allergic Reaction: An abnormal physiological response to a chemical or physical stimuli by a sensitive person.

Ambient: Surrounding conditions, usually refers to normal conditions.

Analgesia: Loss of sensitivity to pain.

Anesthetic: A chemical or drug that causes a total or partial loss of neural sensation.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 19 of 33

Anhydride: A compound or chemical where water has been removed.

Anhydrous: Without water.

Anorexia: Loss of appetite.

Anosmia: Loss of smell.

Anoxia: Without oxygen. A lack of oxygen in inspired air. Not to be confused with Hypoxia.

ANSI: American National Standards Institute. A private organization that identifies needs for industrial standards and coordinates the development of those standards.

Antidote: A remedy to relieve, prevent, or counteract the effects of a poison.

API: American Petroleum Institute: Develops safe operating procedures for the petroleum industry.

Apnea: A condition where breathing temporarily stops.

Aquatic Toxicity, (AQTX): The adverse effects to marine life resulting from being exposed to toxic substances.

Aqueous, (aq): water based solution or suspension, sometimes describes a gaseous compound dissolved in water.

Article: A manufactured item that releases small quantities, if any, of hazardous chemicals and does not pose a health hazard in normal use. Usually controlled under consumer laws.

Asbestosis: Chronic lung disease caused by inhaling airborne asbestos fibers.

Asphyxiant: A vapor or gas, which can cause unconsciousness or death by replacing oxygen in breathing air causing suffocation. A hazard of confined space entry.

ASTM: American Society for Testing and Materials. Publishes voluntary consensus standards for materials, products, systems and services.

Asymptomatic: Neither causing or exhibiting symptoms.

Ataxia: A loss of muscular coordination.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 20 of 33

atm: Atmosphere. Usually used in measurements of atmospheric pressure, i.e., one atm. One atm is 760 mmHg (29.92 in Hg) or 14.7 PSI of pressure.

Atmosphere Supplying Respirator: Provides breathing air from a source independent of the surrounding atmosphere. Air line or self-contained breathing apparatus.

Atrophy: The diminution (wasting away) of tissue, organs, muscles, or entire body due to lack of use.

Auto-Ignition Temperature: The temperature of a solid that when a liquid is introduced on it that the liquid will ignite spontaneously.

Base: See Alkali

Biodegradable: A material that breaks down into innocuous products by the action of living things or naturally.

Biological Exposure Indexes; (BEI): Numerical values based on procedures to determine the amount of a material absorbed into the human body by measuring it or its metabolic products in tissue, fluid, or exhaled air.

Body Burden: The total amount of toxic materials that a person accumulates in the body over a period of time.

Boiling Point: The temperature at which a liquid turns to vapor. Always listed at a pressure of one atmosphere (760 mmHg) unless otherwise stated.

BOM: Bureau of Mines of the U. S. Department of Interior.

Bonding: The interconnecting of two objects by means of a conductor (wire). The purpose is to equalize the electrical potential thus eliminating static electricity discharge when transferring flammable liquids between containers.

Bradycardia: A heartbeat (slow) of 60/bpm or less.

Bronchitis: Inflammation of the bronchial tubes in the lungs.

btu: British Thermal Unit. Heat required to raise the temperature of 1 lb. of water 1°F.

Buffer: A substance that reduces the change in hydrogen ion concentration (pH).

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 21 of 33

CAA: Clean Air Act. Public law PL 91-604, 40 CFR 50-80.

Calorie: A unit of heat. Heat required to raise 1 g. of water 1 degree C.

CAR: Carcinogenic effect.

Carcinogen: A material that has either been found to cause cancer in humans or to cause cancer in animals and therefore is considered capable of causing cancer in humans.

Carcinoma: Cancer of malignant tumor. Cancer is the second most common cause of death. Many cancers are associated with our life style and environment.

CAS: Chemical Abstract Service: CAS identifies chemicals by number which eliminates the confusion of various manufacturer's name.

Catalyst: A substance that makes a chemical reacting faster or slower without being consumed.

Caustic: See Alkali

CC: Closed cup. Used to determine flash points.

Ceiling Limit; (C): The absolute concentration that should not be exceeded during any part of a working exposure (OSHA).

Celsius (centigrade): Zero C = 32 F. Fahrenheit = (C x 1.8) + 32
Celsius = (F -32) x 5/9

CERCLA: Comprehensive Environmental Response Compensation, and Liability Act. PL 96-510, 40 CFR 300. Establishes the superfund, a trust fund to help pay for cleanup of sites where hazardous materials have been released.

CFC: Chlorofluorocarbons. Used as solvents and fire suppressants, also ozone damaging chemicals (ODCs).

CFR: Code of Federal Regulations.

Chelating Agent: A compound that bonds with metal ions. Used to treat metal poisoning.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 22 of 33

CHEMTREC: Chemical Transportation Emergency Center. Operates a 24-hr. toll free telephone number that can be used during chemical transportation emergencies. As of this publication; 1-800-424-9300.

Chloracne: An acne like condition caused by contact of a chemical.

Chronic: Effects that generally occur as a result of long-term exposure and are of long duration as opposed to acute, when chemicals are involved may be listed as Chronic Health Effects or Chronic Toxicity.

CNS: Central Nervous System.

CO: Carbon Monoxide. A colorless, odorless and very toxic gas, usually produced from incomplete combustion.

Combustible (liquids): Any liquid that has a flash point of 100 F (38 C) or higher but below 200 f. See 29 CFR 1910.106. Non-liquid materials are defined as **Ordinary Combustibles**.

Cornea: The clear, transparent portion of the eye.

Corrosive: When applied to the body; a chemical that causes destruction of tissue at site of contact.

CPCS: Consumer Products Safety Commission.

Cutaneous: Pertaining to the skin.

CVS: Cardiovascular effects.

CWA: Clean Water Act. PL 92-500, 40 CFR 100-140 and 400-470.

Cyanosis/Cyanotic: A purplish coloration of the skin and mucous membrane usually caused by lack of oxygen in the blood.

Dangerous Reactive Material: A material that can react by itself (polymerization) or with other materials to produce a hazardous condition.

Decomposition: Chemical breakdown into parts. This process can be dangerous and may be caused by heat, electrolysis, decay, or reaction with other chemicals.

Density: The relation of density (weight) of one material to another, usually to water.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 23 of 33

Depressant: A substance that reduces a bodily function activity or instinctive desire such as appetite.

Dermatitis: Damage and inflammation of the skin.

Dilution Ventilation: Airflow designed to dilute contaminants to acceptable levels. See general ventilation.

DOT: Department of Transportation: Regulates transportation of HCs.

Dust: Solid particles suspended in air. May be produced by crushing, grinding, abrading, or blasting. Most are inhalation, fire, or explosion hazards.

Dyspnea: Difficulty in breathing; shortness of breath.

Dysuria: Difficult or painful urination.

Edema: Abnormal accumulation of fluid in the body tissue.

Electrolyte: As applied to the body; a nonmetallic substance that conducts and electric current in solution by movement of ions rather than electrons.

Embolism: Obstruction in a blood vessel, such as air, blood clot, fat, or other masses.

Embryo: Early stage of development of an organism. In humans, conception to second month.

Embryotoxin: A material harmful to the embryo but usually not to the mother.

Emetic: An agent that induced vomiting such as Ipecac.

Emphysema: An irreversible disease of the lung in which alveolar walls lose resiliency resulting in reduction of lung capacity.

Engineering Controls: Engineering controls systems reduce potential hazards by removing or controlling the workplace hazard, such as ventilation, isolation, enclosures, etc.

EPA: Environmental Protection Agency.

Epidemiology: The study of disease in a population and search for the cause.

ALL DOCUMENTS ON THIS SITE
<http://www.dfrc.nasa.gov/DMS/dms.html>
 ARE FOR REFERENCE ONLY
 THIS SITE IS UPDATED EVERY 30 DAYS

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 24 of 33

Epiphora: Excessive flow of tears, may be caused by a chemical exposure.

Epistaxis: Nosebleed. Heavy nosebleeds can be life threatening.

Ergonomics: The study of human characteristics.

Evaporation Rate: A measure of the time required for a given amount of substance to evaporate compared to the time required for an equal amount of ether or butyl acetate to evaporate.

Exothermic Polymerization: A polymerization reaction that produces heat. See Hazardous Polymerization.

Explosive Limits: See flammable limits.

Explosive: A chemical that causes a sudden release of pressure, gas, and heat when subjected to shock, pressure, high temperature, or ignition.

Exposure: Coming into contact with a hazardous chemical by inhalation, ingestion, skin or eye contact, or absorption.

Extinguishing Media: Fire fighting substance to be used to control a material in the event of a fire.

Eye Protection: Safety glasses, chemical splash goggles, face shields, etc. used when handling an HC.

Fahrenheit: See Celsius.

Fiber: Material with a high ratio of length to diameter, i.e., asbestos, wool, cotton, and polymers. May become lodged in the lungs and cause **fibrosis**.

Fines: Finely crushed or powdered material or fibers.

Fire Diamond (NFPA): The fire diamond has four classes of entries by position.

BLUE (Health Hazards)

0 = Ordinary Combustible in fire
1 = Slightly Hazardous
2 = Hazardous
3 = Extreme danger

RED (Fire)

0 = Will not burn
1 = Will ignite if preheated
2 = Will ignite if moderately heated
3 = Will ignite at most ambient conditions

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 25 of 33

4 = Deadly

4 = Burns readily at ambient conditions

YELLOW (Reactivity)

0 = Stable and will not react with H₂O

1 = Unstable if heated

2 = Violent chemical change

3 = Shock and heat may detonate

4 = May detonate

WHITE (Special Hazards)

OXY = Oxidizer

ACID = Acid

ALKALI = Alkali

COR = Corrosive

-W- = Use no water

Radiation Hazard

Fire Point: The temperature where a liquid will produce vapor to flash near its surface and continue to burn.

Flammables:

Aerosol: An aerosol that produces a flame in excess of 18 inches when valve is full open or that will flashback at any degree of valve opening.

Gas: A gas that at ambient temperature and pressure, becomes flammable with air at 13 percent or less by volume or forms a range of flammable mixture with air wider than 12 percent regardless of the lower limit.

Liquid: A liquid with a concentration of a liquid of 1 percent or greater that has a flash point below 100 F (38 C).

Solids: Solids, other than explosives, that may cause fire by friction, absorption or moisture, or spontaneous chemical change. May be ignite easily and burn in a manner to pose a serious hazard.

Flash Back: Flames travels along the trail of vapor back to its source.

Flammable Limits: Range of gas or vapor concentrations (percent by volume) in air, which will burn or explode if an ignition source is present.

Flash Point: The minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite. There are several means of doing this test each of which may give different results.

Fully Protective Clothing: Includes SCBA; Self-Contained Breathing Apparatus and SCAPE, Self-Contained Atmospheric Protection Ensemble.

Fume: An airborne dispersion consisting of minute solid particles produced by heating a solid.

Gastroenteritis: Inflammation of the stomach and intestines.

ALL DOCUMENTS ON THIS SITE
<http://www.dfrc.nasa.gov/DMS/dms.html>
 ARE FOR REFERENCE ONLY
 THIS SITE IS UPDATED EVERY 30 DAYS

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 26 of 33

General Exhaust: A system for exhausting contaminants from a general work area.

Generic Name: The non-proprietary name for a material.

Grounding: Conduction of electrical charges to the ground. Also see bonding.

Hand Protection: Specific type of gloves or other hand protection required to handle HCs.

Hazardous Decomposition: A material that reacts with other material to produce a hazardous material, i.e., burning, welding, heated, etc.

Hazardous Material: In a broad sense, any chemical or compound capable of causing physical injury or effects on health to humans.

Hazardous Polymerization: Where small molecules combine to form larger molecules, which may give off large amounts of energy.

Hematopoietic System: The blood forming mechanism of the body.

Hematuria: Blood in the urine.

Hemolysis: Separation of hemoglobin from red blood corpuscles.

HEPA: High-Efficiency Particulate Air-purifying respirator equipment.

Hepatotoxin: A substance that damages the liver.

HMIS: Hazardous Materials Identification System. A system that classifies most hazardous material.

Hydrophilic: Gr. "for water loving." Materials that absorbs water and may swell.

Hygroscopic: Absorbs available moisture.

Hyperbolic: Ignites easily by ignition source or self igniting when exposed to an oxidizer.

Hypoxia: Reduced level of blood to body cells, especially to brain cells.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 27 of 33

IARC: International Agency for Research on Cancer. One of the sources that OSHA uses to identify carcinogens.

IDLH: Immediately Dangerous to Life and Health.

Impervious: A material that does not allow another substance to pass through it.

Incompatible: Materials which may cause dangerous reactions from direct contact with another.

Ingestion: Taking in a substance through the mouth.

Inhalation: Breathing in of a substance such as gas, vapor, fume, mist, or dust.

Inhibitor: A material that added to another will prevent reactions, which are usually unwanted.

Ignition Temperature: Minimum temperature required to initiate or cause self-sustained combustion independently of an ignition source.

Inorganic: Substances that do not contain hydrocarbons.

Irritant: A material that being exposed to eyes, skin, or lungs in sufficient amount and time will cause an inflammatory reaction. Generally reversible.

Ketosis: Accumulation of ketone bodies in the body due to a disturbed carbohydrate metabolism.

Kilogram (kg); Metric weigh of about 2.2 lb.

Label: Any written, printed, or graphic sign or symbol displayed on or affixed to containers of hazardous materials.

Lacrimation: Production of tears.

Landfill: A site where waste is sealed and buried under earth.

Latency Period: The time that elapses between exposure and the first sign of a disease illness. May be minutes to years.

Lavage: Medical; to wash out a hollow organ such as the stomach with fluids.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 28 of 33

LC50; Lethal Concentration: The concentration of a chemical in air that will kill 50 percent of a group of test animals by inhalation.

LD50; Lethal Dose: A single dose of a chemical that is expected to kill 50 percent of a group of test animals.

LDLo; Lethal Dose Low: The lowest dose of a substance introduced over time other than by inhalation that can cause death in humans or animals.

Liter (L): Liquid metric volume about the same as a US quart. (1.05 of a quart).

Lesions: A change, injury, or damage to tissue or organ.

LEL, Lower Explosion Limit: The smallest amount of gas or vapor in air that will explode with and ignition source. Also see UEL or Upper Explosion Limit.

Leukemia: A system for capturing and exhausting contaminants from the point where the contaminants are produced.

m3: Cubic meter.

Malaise: A feeling of general discomfort, distress, or uneasiness.

Material Safety Data Sheet: See MSDS.

Melting Point: The temperature at which a solid substance changes to a liquid.

mg/kg: Milligrams per kilogram.

mg/m3: Milligrams of contaminants per cubic meter of air.

Miscible: The extent to which liquids or gases can be mixed.

Mist: Suspended liquid droplets in the air. May be caused by splashing or atomizing a liquid.

mmHg: Millimeters of mercury. A measure of pressures.

mppcf: Million particles per cubic foot.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 29 of 33

MSDS: Material Safety Data Sheet. OSHA required information sheet that must accompany all hazardous chemicals. The MSDS provides the basis for the Hazard Communications standard. See MSDS Information, Pg. 11.

Mutagen: (MUT): A chemical capable of causing mutations or alterations of the genetic material in living cells, usually carcinogens.

Narcosis: A state of stupor, unconsciousness, or arrested activity produced by the influence of narcotics or other chemicals.

National Fire Protection Agency (NFPA): Publishes recommended fire codes including “diamond” hazardous warning labels.

Necrosis: Localized death of tissue.

Neoplasm: A new or abnormal tissue growth that is uncontrollable and progressive.

Nephrotoxic: Nephro = kidneys; Toxic = poison. A substance that is poisonous to the kidneys.

Neuritis: Inflammation of the nerves.

NIOSH: National Institute of Occupational Safety and Health. Conducts health and safety research and advises OSHA. Does not usually carry a force of law.

NOEL: No Effect Level: Nonflammable. Also a DOT hazard class for nonflammable compressed gases.

NTP: (National Toxicology Program): A federal organization that develops test for toxic materials. It also develops toxic-logical profiles on toxic materials.

Nuisance Particles: TLV[®] of 10 mg/m³ or 30 mmpcf of dust from materials that are not significant organic disease or toxic producers.

Nystagmus: Involuntary motion of the eyes. May be accompanied by dizziness or position disorientation such as vertigo.

Odor Threshold: The lowest concentration of a substance’s vapor, in air, that can be smelled.

Organic: A class of chemical compounds that contain carbon.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 30 of 33

OSHA: Occupational Safety and Health Administration. Works to assure safe and healthful conditions for employees by setting and enforcing standards.

Oxidizer: A chemical that promotes combustion by yielding oxygen. Examples are; ClO₃, N₂O₄, NO₃, etc.

PEL: Permissible Exposure Limits. PEL standards are listed in 29 CFR 1910.1000 Tables Z-1, Z-2, and Z-3.

Percent Volatile by Volume: The percentage of a liquid or solid by volume that evaporates at 70 F.

Personal Hygiene: Measures taken to limit exposure by keeping work areas and body clean, such as washing hands, work clothes, and equipment to eliminate hazardous residue.

Personal Protective Equipment (PPE): Clothing or equipment worn to isolate workers from direct contact with hazardous material.

pH: A logarithmic scale from 1 to 14 which measures the acidity or alkalinity of a substance. Neutral is 7.0. Above 7.0 is an alkaline below 7.0 is an acid.

Physical Hazard: A chemical or material that may combust, explode, or in other ways do physical damage to persons or property as opposed to causing a health hazard.

Polymerization: A molecular change of a material where two or more small molecules combine to form a larger molecule. When this occurs the chemical may become unstable and or produce heat.

ppb: Parts per billion.

ppm: Parts per million.

ppt: Parts per trillion.

Prostration: Exhaustion or incapacitation.

Pulmonary: Pertaining to the lungs. Pulmonary edema = fluid in the lungs.

Pyrophoric: A substance that will ignite when exposed to ambient air. Example; Triethyl Borane (Used to start SR-71 engines).

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 31 of 33

Reactivity: A measure of the tendency of a substance to undergo chemical change. Energy is usually released with a chemical change.

Reducing Agent: A chemical which will combine with oxygen or lose electrons in a reaction.

REL: NIOSH Recommended Exposure Limit.

Reproductive Toxin: Any chemical that will interfere with the male or female reproduction function. May alter germ cells, cause loss of sexual drive, impotence, infertility, or sterility (also see Mutagen, and Teratogen).

Resource Conservation and Recovery Act (RCRA). This Act is designed to control hazardous wastes. See 40 CFR 240-271.

Routes of Entry: The means by which a HC can enter the body.

SCBA/SCBAF: Self-Contained Breathing Apparatus; Self-Contained Breathing Apparatus with Face shield.

Sanitizer: A material that over time will cause a person to react to its exposure such as to cause irritation to skin, allergic reactions, etc.

Silicosis: Disease of the lungs caused by breathing silica dust.

Solubility in Water: The percent of a substance that will dissolve in water at ambient temperature.

Solvent: Will dissolve another substance.

Specific Gravity: The weight of a liquid or solid as compared to water.

Stability: The ability of a substance to be stored without undergoing unwanted changes.

STEL: Short Term Exposure Limit. The limit for exposure to a substance in a short term, usually in a 15 minute period. STEL exposure is limited to four (4) exposures per eight (8) hours with 60 minutes between exposures.

Suspected Carcinogen: Will cause cancer in test animals and is suspected to do the same in humans.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 32 of 33

Systemic Toxicity: Adverse effects of a toxic that spreads throughout the body. Also, systemic poisoning.

Synergy: The interaction of two or more substances which give a greater reaction than each of the substances would give individually.

Tachycardia: A rapid heart beat above 100 bpm.

Tachypnea: Fast breathing (may be for no apparent reason). See hyperventilation.

Target Organ: A body organ that is targeted by a chemical. Example; excessive alcohol may target to liver.

TCLo: Toxic Concentration Low; the lowest concentrations of a substance in air to which humans or animals have been exposed over a given time which will cause a toxic effect.

TDLo: Toxic Dose Low; the lowest dose introduced other than by inhalation over a given time that will cause a toxic effect in humans or animals.

Teratogen: A chemical that can cause a fetus to be malformed, example; Thalidomide.

TLV[®]: Threshold Limit Value; the level of exposure under which all workers may be exposed with out danger. Usually listed for a Time Waited Average (TWA) such as for 8 hours for a workday or 40 hours for a workweek.

Toxic Substance: Any substance which can cause injury or is believed to be capable of causing injury or health problems to humans.

Trade Secret: Information on the chemicals in a substance or procedures that a company wants to keep confidential in order to maintain advantage over competitors.

TSCA: Toxic Substances Control Act. See 40 CFR 700-799.

TWA: Time Waited Average. Also see TLV[®]

Tinnitus: A ringing sound in the ear. May be caused by nerve damage.

UEL: Upper Explosive Limit: An explosive substance will not explode at a greater concentration than the UEL. See LEL for lower explosive limit.

DRYDEN CENTERWIDE PROCEDURE		
Hazard Communication and Material Safety Data Sheet Instruction Guide and Dictionary	DCP-S-038	REVISION: Baseline
	DATE: February 3, 1999	Page 33 of 33

Unstable: A chemical that tends to decompose or react on a manner that could cause a hazard. Reaction may be triggered by temperature, pressure, shock, or mixing with other chemicals.

Uremia: Retention of body fluids.

Vapor Density: The weight of a gas or vapor compared to the weight of air.

Vapor Pressure, (VP): The pressure a liquid will produce in a closed container above its own fluid. Vapor pressure is usually measured in millimeters of mercury (mmHg) at a temperature of 68 F or 20 C.

Ventilation: Any movement of air that circulates fresh air (non-contaminated) to replace contaminated air.

Vermiculite: May be referred to as “cat litter.” Expanded mica used as absorbent for spill control and clean up.

Volatility: A measure of how quickly a substance forms a vapor at ordinary temperatures.

Vertigo: The loss of spatial sense of position. A feeling of spinning in space.

Viscosity: The tendency of a fluid to resist internal flow without regard to its density.

Waste Disposal Methods: Proper disposal methods for contaminated materials, recovered liquids or solids, and their containers. Waste disposal procedures fall under other OSHA regulations than Hazard Communications.

Water-Reactive: A chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

Z-Lists: OSHA’s toxic and Hazardous Substance Tables located in 29 CFR 1910.1000. Materials found in these tables are considered to be hazardous and require special handling.